

CLAIMS

What is Claimed is:

1. A display device comprising:

polarization axis varying means;

first polarizing splitter means disposed on one side of said polarization axis varying means which transmits a light ray component linearly polarized in a first direction while reflecting or absorbing a light ray component linearly polarized in a predetermined direction different from said first direction;

second polarizing splitter means disposed on another side of said polarization axis varying means which reflects a light ray component linearly polarized in a second direction while transmitting a light ray component linearly polarized in a predetermined direction different from said second direction;

lighting means disposed on a side of said second polarizing splitter means opposite to said polarization axis varying means; and

light diffusing means disposed between said second polarizing splitter means and said lighting means which diffuses and reflects a light ray coming in from said second polarizing splitter means, while transmitting a light ray coming from the said lighting means toward said second polarizing splitter means.

2. A display device according to Claim 1, wherein said light diffusing means emits a color light ray.

3. A display device according to Claim 1, wherein said light diffusing means emits a light ray.

4. A display device according to Claim 1, further comprising light reflective means disposed on a side of said lighting means opposite to said light diffusing means for reflecting a light ray coming in from said lighting means, wherein said lighting means transmits a light ray coming in from said light diffusing means toward said light reflective means, while transmitting a light ray coming in from said light reflective means toward said light diffusing means.

5. A display device according to Claim 4, wherein said light reflective means emits a light ray.

6. A display device according to Claim 4, wherein said light reflective means emits a color light ray.

7. A display device according to Claim 1, further comprising light exit angle control means disposed between said second polarizing splitter means and said light diffusing means for outputting a light ray at an exit angle within a predetermined range when receiving a light ray.

8. A display device according to Claim 1, further comprising light exit angle control means disposed between said lighting means and said light diffusing means for outputting a light ray at an exit angle within a predetermined range when receiving a light ray.

9. A display device according to Claim 1, further comprising third polarizing splitter means disposed between said lighting means and said light diffusing means which reflects a light ray component linearly polarized in a third direction, while transmitting a light ray component linearly polarized in a predetermined direction different from said third direction.

10. A display device according to Claim 9, wherein said second polarizing splitter means and said third polarizing splitter means are disposed such that said second direction and said third direction are different from each other.

11. A display device comprising:

- a liquid-crystal display panel having a liquid crystal interposed between a pair of substrates;
- a polarizer disposed on one side of said liquid-crystal display panel;
- a first reflective polarizer disposed on another side of said liquid-crystal display panel;
- a lighting apparatus disposed on a side of said first reflective polarizer opposite to polarization axis varying means; and
- a light diffusing plate disposed between said first reflective polarizer and said lighting means which diffuses and reflects a light ray coming in from said first reflective polarizer, while transmitting a light ray coming in from said lighting apparatus toward said first reflective polarizer.

12. A display device according to Claim 11, wherein said diffusing plate is a fluorescent plate.

13. A display device according to Claim 11, further comprising a reflector on a side of said light diffusing plate opposite to said lighting apparatus, wherein said lighting apparatus comprises a light source and a substantially transparent light guide.

14. A display device according to Claim 13, wherein said reflector is a hologram.

15. A display device according to Claim 13, wherein said reflector is a fluorescent plate.

16. A display device according to Claim 11, further comprising a film including a plurality of layers having different refractive indexes laminated together and disposed between said first reflective polarizer and said light diffusing plate.

17. A display device according to Claim 11, further comprising a film including a plurality of layers having different refractive indexes laminated together and disposed between said lighting apparatus and said light diffusing plate.

18. A display device according to Claim 11, further comprising a second reflective polarizer disposed between said light diffusing plate and said lighting apparatus.

19. A display device according to Claim 18, wherein said first reflective polarizer and said second reflective polarizer are arranged such that polarization axis of each polarizer is out of alignment with the other.

20. A display device according to Claim 11, wherein said first reflective polarizer is a laminate of a plurality of layers having birefringence and a plurality of layers having no birefringence in which one layer having birefringence and one layer having no birefringence are alternately laminated.

21. An electronic apparatus having a display device with a liquid-crystal display panel as a display unit, said display device comprising:

a liquid-crystal display panel having a liquid crystal interposed between a pair of substrates;

a polarizer disposed on one side of said liquid-crystal display panel;

a first reflective polarizer disposed on another side of said liquid-crystal display panel;

a lighting apparatus disposed on a side of said first reflective polarizer opposite to polarization axis varying means; and

a light diffusing plate disposed between said first reflective polarizer and said lighting means which diffuses and reflects a light ray coming in from said first reflective polarizer while transmitting a light ray coming in from said lighting apparatus toward said first reflective polarizer.